

THE GENUS *ATTALEA* (PALMAE) IN PANAMA¹

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ABSTRACT

The two Panamanian species of *Attalea* (Palmae) are described and illustrated, *A. iguadummat* for the first time.

Attalea (Palmae) is a poorly collected neotropical genus of about 25 species centered in Amazonian South America and reaching its northwestern limit in Panama. When Bailey (1943) treated the palms of Panama the genus was not known from the isthmus. *Attalea* was last revised by Glassman (1977), at which time one species was recorded in Panama. Recent fieldwork has revealed an undescribed species of *Attalea* there. A circumscription of the genus in Panama is provided, and the new plant is described and named *A. iguadummat*.

***Attalea* Kunth, Nov. Gen. et Sp. 1: 309. 1816.**

TYPE: *A. amygdalina* Kunth, Nov. Gen. et Sp. 1: 310. 1816.

Arborescent or acaulescent, monoecious. Leaves pinnate, the pinnae inequilateral at the tip, clustered in groups or evenly distributed along the rachis. Inflorescences either androgynous or staminate, bearing a pair of bracts, the peduncular bract large, woody, sulcate, terminating in a long or short rostrum, enclosing the inflorescence in bud; staminate inflorescence branched to one order, the rachillae with many flowers, these disposed in 1 or 2 rows, or spirally arranged in dyads. Staminate flowers with 3 short, triangular sepals, and 3 valvate, lanceolate-apiculate, flat petals; stamens 6–10 (in Panama), shorter than the petals, the anthers straight, dehiscent longitudinally. Androgynous inflorescence with sessile or short pedicelled pistillate flowers. Pistillate flowers 2–4 cm long, with 3 sepals and 3 petals, the sepals and petals imbricate; stamens reduced to a prominent staminodial ring; ovary ovate; stigmas 3, apical. Fruit with exocarp thin, fibrous; mesocarp pulpy and

fibrous; endocarp thick, hard, without fibers. Seeds 1–3, irregularly shaped.

Attalea is characterized by its large size, separate staminate and androgynous inflorescences, stamens shorter than the flattened petals, and large, oblong, woody fruits. Within the Cocoeae, *Attalea* is closely related to *Scheelea*, *Orbignya*, and *Maximiliana*, together comprising the subtribe Attaleinae, the genera of which are distinguished from each other by characters of the androecium.

Attalea allenii is abundant throughout San Blas and many plants produce fruits annually, yet inflorescences at anthesis are rarely seen. During two years of collecting in San Blas, the androgynous inflorescence was seen only once and the staminate inflorescence only three times. When Glassman (1977) prepared his preliminary treatment of *Attalea*, the androgynous inflorescence was unknown. Androgynous inflorescences of *A. iguadummat* (described below) are equally rare, while the staminate inflorescences, in contrast, are abundantly produced. *Attalea iguadummat* is andromonoecious, old staminate inflorescences having been observed on fruiting plants. Whether both types of inflorescence are produced on individuals of *A. allenii* is unknown. The pollination syndrome of the genus is unknown (Henderson, 1986). The staminate inflorescences of both Panamanian species produce a strong musky odor at anthesis.

KEY TO THE SPECIES OF *ATTALEA* IN PANAMA

- 1a. Pinnae evenly spaced along the rachis; middle pinnae 6.5–7 cm wide; staminate inflorescence 125–155 cm long; rachillae 12.5–

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18.2 cm long; flowers spirally arranged in dyads; stamens 8–10 *A. iguadummat*

- 1b. Pinnae in groups of 3 to 5 along the rachis; middle pinnae 2–4 cm wide; staminate inflorescence 15–25 cm long; rachillae 1–4.5 cm long; flowers two-ranked; stamens 6 *A. allenii*

Attalea allenii H. Moore, *Gentes Herb.* 8: 191. 1949. TYPE: Panama. Colón: Puerto Pilón, 10 m, *Allen 4103* (holotype, MO; isotype, BH). Figure 1.

Stem solitary, short or subterranean. Leaves 12–15, about 5 m long; petiole 60–80 cm long, 2.5 cm diam. at base, 2 cm diam. at apex; rachis 3.3–3.7 m long; pinnae 85–87 per side, arranged in groups of 3–5, linear, glabrous, inequilateral at tip, the margins ferruginous-lepidote; middle pinnae 75–95 cm long, 2–4 cm wide; apical 9–10 pinnae regularly spaced, separated basally, coherent at the apex, forming 2 broad lobes about 10 cm wide at the terminus of the rachis. Inflorescences interfoliar, produced at ground level, erect, either staminate or androgynous; bracts 2; prophyll 30 cm long, 4 cm wide, the apex short and rounded; peduncular bract 35 cm long with a rostrum 7 cm long. Staminate inflorescence 15–25 cm long; peduncle 8 cm long, 8–10 mm wide, brown furfuraceous at anthesis; rachis 23–26 cm long; rachillae about 16–28(–50), 1–4.5 cm long, bearing 6–8 staminate flowers in 2 ranks. Staminate flowers with sepals 3, deltoid, 1 mm long; petals 3, valvate, lanceolate-apiculate, glandular, 9–13 mm long, 2–3 mm wide; stamens 6, filaments 2–3 mm long, the anthers straight, 4–6 mm long; pistillode minute. Androgynous inflorescence unbranched; peduncle 10–24 cm long, 1–1.4 cm wide; rachis 10 cm long; pistillate flowers disposed in triads with 2 staminate flowers. Staminate flowers of triads 6–7 mm long, with 3 sepals, these connate for less than 0.5 mm at base, triangular, 2 mm long; petals (5–)6, 4–5 mm long; stamens 6, erect, dorsifixed, the anthers 1–1.5 mm long; pistillode minute. Pistillate flowers sessile, crowded on the rachis, 3.2 cm long, enveloped at the base by 3 triangular bracts 2 cm long and 1.6 cm wide; sepals 3, broadly imbricate, 2.7–2.9 cm long, 1.5–2 cm wide, irregularly lobed at apex; petals 3, imbricate, 2.5–2.7 cm long, 1.8–2 cm wide, irregularly lobed at apex; staminodial ring 6–7 mm deep, minutely 6-lobed; ovary conical, 2.3–2.5 cm long, 1.2–1.4 cm wide at base, densely brown tomentose; stigmas 3, arching, 8–11 mm long; ovules 3, basal. Infructescence with 7–24 fruits, these obovoid,

6–7.5 cm long, 3.5–4 cm wide, the exocarp thin, fibrous, densely ferruginous-lepidote, appearing smooth; mesocarp 1.5–2 mm thick, fibrous; endocarp 3–5 mm thick, bony. Seeds 1–3, irregularly shaped, conforming to the shape of the cavity in which they develop.

Additional specimens examined. PANAMA. BOCAS DEL TORO: Río San Pedro, *Gordon 15c* (MO). CANAL AREA: Coco Solo, *Gentry 6298* (MO). COLÓN: Nombre de Diós, July 1911, *Pittier 4237* (US); Santa Rita Ridge, *Croat 15308* (MO); Santa Rita Ridge, 300–500 m, *Gentry 6556* (MO). PANAMÁ: El Llano–Cartí Rd., 12 Jan. 1981, *Read et al. 81-57* (US). COMARCA DE SAN BLAS: El Llano–Cartí Road km 16.7, 350 m, 9°19'N, 78°55'W, “igua” (Kuna), “mange” (Spanish), 4 Nov. 1984, *de Nevers et al. 4152* (MO, NY); El Llano–Cartí Road km 19, 10 Aug. 1984, *de Nevers 3639* (MO, PMA); same locality, 18 June 1986, *de Nevers & Herrera 7954* (CAS, MO); same locality, 11 Mar. 1986, *de Nevers et al. 7301* (MO); Cangandi, 30–150 m, 9°24'N, 79°8'W, 29 Jan. 1985, *de Nevers et al. 4735* (MO); same locality, “igua kaa” or “igua sai la let” (Kuna), 10 Feb. 1986, *de Nevers & Herrera 7191* (MO); Río Tiwar (R. Acla), 8°48'N, 77°40'W, 25–100 m, *Sugden 624* (MO); Playón Chico, 0–200 m, *Gentry 6419* (MO); same locality, “ikwa e sana” (Kuna), *Stier 109* (MO). COLOMBIA. CHOCÓ: Río Salaqui, 6 days upstream of Río Sucio, Hydro Camp 14, 200 m, *Duke 11377* (BH); 2 km from Las Animas on rd. to Quibdó, 5°4'N, 76°47'W, *King et al. 664* (BH, NY). VALLE: Buenaventura Bay, Aguadulce Island, *Moore et al. 9468* (BH); Buenaventura, *Moore et al. 9460* (BH); km 14 marker between Buenaventura and Bajo Calima, below 50 m, 3°56'N, 76°59'W, *Croat 57552* (MO); Dindo area, Bajo Calima, 100 m, 3°59'N, 76°58'W, *Gentry & Monslave 48429* (MO); Bajo Calima, *Gentry et al. 40395* (MO); Río Calima, La Trojita, 5–50 m, 19 Feb. 1944, *Cuatrecasas 16397* (US); Bahía de Buenaventura, Quebrada de San Joaquín, 0–10 m, 20 Feb. 1946, *Cuatrecasas 19948* (US). BOLÍVAR: Mun. Morales, cgfo. Norosi, camino a Tiquisionuevo, 130–200 m, *Cuadros 2194* (MO).

Attalea allenii is well known from the original description and many collections. It ranges from Panama to Colombia. In Panama it occurs in tropical wet forest (sensu Holdridge et al., 1971) on the Atlantic slope. The Kuna name is “igua,” the leaves are used medicinally, and the immature fruits are eaten.

Attalea iguadummat de Nevers, sp. nov. TYPE: Panama. Colón: Santa Rita Ridge 13.8 km from Transisthmica Hwy., 350 m, 9°20'N, 79°45'W, 24 Feb. 1986, *de Nevers 7197* (holotype, CAS; isotypes, K, MO, PMA). Figure 2.

Species nova *A. victoriana* Dugand similis sed floribus masculis spiratim depositis, staminibus 8–10, filamentis 4–5 mm longis, antherisque 2–3 mm longis differt.



FIGURE 1. Inflorescence of *Attalea allenii*, de Nevers 4152.

Stem solitary, short or subterranean. Juvenile leaves 1.5–2 m long, 20–26 cm wide, undivided, obovate, the margins dentate with triangular teeth 1.5–2 cm long. Mature leaves 9–17, arching; petiole 55–82 cm long, 5.7–7.2 cm wide at base, broadly channeled adaxially; rachis 6.75–7.23 m

long; pinnae 104–109 per side, evenly spaced, linear, glabrous, inequilateral at tip, the margins ferruginous-lepidote; middle pinnae 144–148 cm long, 6.5–7 cm wide, with midvein raised adaxially and abaxially; apical pinnae 1.6–1.9 cm wide, 55–59 cm long, free. Inflorescences inter-

foliar, produced at ground level, erect, either staminate or androgynous, both inflorescence types produced on the same plant; bracts 2; prophyll 20–25 cm long, encircling base of peduncular bracts; peduncular bract woody, prominently vertically sulcate, enclosing inflorescence in bud, splitting and opening flat at anthesis, erect, 115–203 cm long, 30 cm wide, with prominent non-splitting rostrum 12–15 cm long. Staminate inflorescence 125–155 cm long; peduncle 90–110 cm long, 1.5 cm wide, covered in a layer of furfuraceous brown tomentum, this soon eroded away; rachis 35–45 cm long; rachillae 40–50, subtended by an acute, triangular bract 1–1.5 cm long, this striate when dry; rachillae with basal sterile portion 2.5–4.2 cm long, fertile portion 10–14 cm long, with scattered groups of minute scales, these bright white in dried specimens. Staminate flowers spirally arranged in dyads, each subtended by a minute bract 0.5–1 mm long. Sepals 3, 1–1.5 mm long, striate when dry; petals 3, valvate, 1.3–1.7 cm long, 1 mm wide, flattened, curved to recurved at the tip, sometimes straight or “S” curved, striate when dry, but not when fresh; stamens 8–10, about $\frac{1}{2}$ the length of the petals; filaments 2–3 mm long, separate and free; adjacent stamens occasionally with the filaments connate at the base for 1 mm or the filaments connate completely, divergent just below the anthers; tip of filament attached $\frac{1}{3}$ – $\frac{1}{2}$ way up the anther, the thecae united above the point of attachment, separate or occasionally united slightly below it; anthers 2–3 mm long, straight, dehiscing longitudinally; pistillode 1–2 mm long, 3-lobed. Androgynous inflorescence at anthesis not known; peduncular bract as in staminate inflorescence; peduncle 60–70 cm long, the rachis 35–45 cm long. Pistillate flowers short-pedicellate or sessile; sepals 3, 22–35 mm long, 15–18 mm wide at base, broadly triangular; petals 3, 40–45 mm long, acute; styles 3, apical, exerted from the petals; perianth persistent in fruit, the sepals chartaceous; petals chartaceous, margin thin, undulate; the staminodial ring enlarged, 1.1–1.8 cm deep, with 15–20 lobes, these 2–3 mm deep, 2–4 mm wide, commonly bifid. Infructescence with (3–)45–65 fruits, these 7–10 × 4.5–6.3 cm, obovate, brown tomentose, with the styles and stigmas persistent; exocarp 1–2 mm thick, tough, fibrous; mesocarp 3–5 mm thick, fibrous; endocarp 2–8 mm thick, bony, smooth, without fibers; seeds 1–3, irregularly shaped; endosperm homogeneous.

The specific epithet is derived from the Kuna name for the plant, “igua dummat.” It honors the Kuna Indians of San Blas, Panama, who have initiated a self-managed forest reserve and wildlife sanctuary on their tribal lands.

Additional specimens examined. PANAMA. COLÓN: Santa Rita Ridge, 8 miles from Transisthmica Hwy., in primary forest along small stream, 420 m, 9°25'N, 79°40'W, 2 Feb. 1986, Hammel, McPherson & Merello 14387 (MO); same locality, km 22, in forest on ridges, slopes and in draws, 17 Feb. 1986, Hammel, McPherson & Roubik 14507 (MO); same locality, 9 Mar. 1968, Dressler 3405 (US); same locality, km 13.8, 13 May 1986, de Nevers 7734 (BH, MO, PMA). COMARCA DE SAN BLAS: Río Taindi, 9°25'N, 79°11'W, 5 Apr. 1986, de Nevers & Herrera 7656 (F, MO, PMA).

Attalea iguadummat is distinctive in its acaulescent habit, broad leaflets evenly spaced along the rachis, large inflorescence, and dyads of spirally arranged staminate flowers with 8–10 stamens. Among acaulescent species of *Attalea* with pinnae evenly distributed along the rachis, *A. iguadummat* is similar to *A. victoriana* Dugand and *A. nucifera* Karsten. It differs from *A. victoriana* in its spirally arranged staminate flowers (vs. the staminate flowers disposed in 2 rows on one side of the rachilla), shorter staminate rachillae (12.5–18.2 cm vs. 25 cm), fewer stamens (8–10 vs. 12–15), and sessile (vs. pedicellate) pistillate flowers. *Attalea iguadummat* is distinct from *A. nucifera* in its longer middle pinnae (144–148 vs. 93–131 cm) and its glabrous staminate petals (vs. staminate petals reddish glandular). *Attalea iguadummat* may be most closely related to *A. tessmannii* Burret, the only other species with staminate flowers spirally arranged in dyads. *Attalea tessmannii* is an arborescent species from Amazonian Peru which differs from *A. iguadummat* in its branched androgynous inflorescence with pedicellate pistillate flowers. *Attalea piassabossu* Bondar has the staminate flowers paired, but they are disposed in a single row, not spirally arranged, and it is arborescent.

Attalea iguadummat is known only from the extremely wet Atlantic slope of the mountains between Colón and the western border of San Blas, Panama. This may be the wettest area in Panama (Myers, 1969; Anonymous, 1975). Further collecting may reveal additional localities in the Atlantic lowlands to the west in the Provinces of Coclé, Veraguas, or Bocas del Toro, or the palm may be truly endemic to the wet ocean slopes between Colón and the Mandinga River.

The Taindi River locality of *A. iguadummat*



FIGURE 2. Inflorescence of *Attalea iguadummat* at anthesis, *Hammel 14387*, photo B. Hammel.

was discovered via a clue from a Kuna Indian. During an ethnobotanical survey in San Blas informants were asked to name wild edible plants that they harvest. One man mentioned "iguadummat." "Igua" is the Kuna name for *A. al-*

lenii, "dummat" means big. When asked where the "big *Attalea*" could be found the informant mentioned the Iguagandi River, a Taindi tributary. In Kuna "-gandi" signifies place of, implying the Iguagandi River is the "river of *Attalea*."

Kuna botanists state that the Mandinga River is the eastern limit of *A. iguadummat*, which has not been found further east in San Blas during two years of intensive palm collecting there. Immature fruits of *A. iguadummat* are eaten occasionally by the Kuna.

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